



SEQUENCE LISTING

(1) GENERAL INFORMATION

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- (ii) TITLE OF THE INVENTION: HLA Binding Peptides and Their Uses
- (iii) NUMBER OF SEQUENCES: 103
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- (v) COMPUTER READABLE FORM:
(A) MEDIUM TYPE: Diskette
(B) COMPUTER: IBM Compatible
(C) OPERATING SYSTEM: DOS
(D) SOFTWARE: FastSEQ for Windows Version 2.0
- (vi) CURRENT APPLICATION DATA:
(A) APPLICATION NUMBER: 09/017,524
(B) FILING DATE: 03-FEB-1998
(C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA:
(A) APPLICATION NUMBER: US 08/589,107
(B) FILING DATE: 23-JAN-1996
- (viii) ATTORNEY/AGENT INFORMATION:
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(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

Sub
E2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Phe Leu Trp Thr Gln Ser Leu Arg Arg
1 5

(2) INFORMATION FOR SEQ ID NO:2:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Gly Ile Pro Tyr Cys Asn Tyr Ser Lys
1 5

(2) INFORMATION FOR SEQ ID NO:3:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Gly Val Val Arg Val Trp Asp Val Lys
1 5

(2) INFORMATION FOR SEQ ID NO:4:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Met Leu Arg Leu Phe Asp Phe Asn Lys
1 5

(2) INFORMATION FOR SEQ ID NO:5:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

Sub
E2

A

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Arg Thr Arg Asp Ile Tyr Ile Ser Arg
1 5

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Ser Ala Val Ile Asp Ala Leu Pro Arg
1 5

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Ser Val Leu Arg Ala Val Leu Pro Arg
1 5

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Val Thr Phe Leu Leu Leu Cys Gly Arg
1 5

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

Sub
E2

22

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Ala Met Ser Cys Asp Phe Asn Gly Gly Lys
1 5 10

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Gly Ser Tyr Ile Ala Leu Asp Ser Gly Arg
1 5 10

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Lys Ser Phe Leu Trp Thr Gln Ser Leu Arg
1 5 10

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Leu Thr Tyr Ser Gln Leu Met Thr Leu Lys
1 5 10

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

Sub
E2

A

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Arg Thr Arg Asp Ile Tyr Ile Ser Arg Arg
1 5 10

(2) INFORMATION FOR SEQ ID NO:14:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Tyr Arg His Leu Leu Cys Leu Glu Arg
1 5

(2) INFORMATION FOR SEQ ID NO:15:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Gly Thr Tyr Glu Gly Leu Leu Arg Arg Arg
1 5 10

(2) INFORMATION FOR SEQ ID NO:16:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Leu Leu Arg Arg Asn Gln Met Gly Arg
1 5

(2) INFORMATION FOR SEQ ID NO:17:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

Sub
Eq

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Phe Gln Asn Ser Thr Phe Ser Phe Arg
 1 5

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Leu Leu Ala Phe Leu Gln Tyr Arg Arg
 1 5

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...2
- (D) OTHER INFORMATION: Xaa = Val, Leu or Met

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Tyr or Asp

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 8...8
- (D) OTHER INFORMATION: Xaa = Gln or Asn

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Xaa Xaa Xaa Xaa Xaa Xaa Ile Xaa Lys Lys
 1 5 10

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

Sub
E2

2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

His Thr Leu Trp Lys Ala Gly Ile Leu Tyr Lys
1 5 10

(2) INFORMATION FOR SEQ ID NO:21:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Ser Val Val Arg Arg Ala Phe Pro His
1 5

(2) INFORMATION FOR SEQ ID NO:22:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Ala Phe Thr Phe Ser Pro Thr Tyr Lys
1 5

(2) INFORMATION FOR SEQ ID NO:23:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Ser Ser Ala Gly Pro Cys Ala Leu Arg
1 5

(2) INFORMATION FOR SEQ ID NO:24:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

Sub
E2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Cys Ala Leu Arg Phe Thr Ser Ala Arg
1 5

(2) INFORMATION FOR SEQ ID NO:25:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Trp Met Asn Ser Thr Gly Phe Thr Lys
1 5

(2) INFORMATION FOR SEQ ID NO:26:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Leu Gly Phe Gly Ala Tyr Met Ser Lys
1 5

(2) INFORMATION FOR SEQ ID NO:27:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Val Ala Gly Ala Leu Val Ala Phe Lys
1 5

(2) INFORMATION FOR SEQ ID NO:28:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

Sub
E2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Met Val His Gln Ala Ile Ser Pro Arg
1 5

(2) INFORMATION FOR SEQ ID NO:29:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Gln Met Val His Gln Ala Ile Ser Pro Arg
1 5 10

(2) INFORMATION FOR SEQ ID NO:30:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Thr Ile Lys Ile Gly Gly Gln Leu Lys
1 5

(2) INFORMATION FOR SEQ ID NO:31:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Thr Leu Phe Cys Ala Ser Asp Ala Lys
1 5

(2) INFORMATION FOR SEQ ID NO:32:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

Sub
E2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys
1 5 10

(2) INFORMATION FOR SEQ ID NO:33:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Arg Ile Val Glu Leu Leu Gly Arg Arg
1 5

(2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Val Thr Ile Lys Ile Gly Gly Gln Leu Lys
1 5 10

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Val Met Ile Val Trp Gln Val Asp Arg
1 5

(2) INFORMATION FOR SEQ ID NO:36:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

Sub
E2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

His Leu Phe Gly Tyr Ser Trp Tyr Lys
1 9

(2) INFORMATION FOR SEQ ID NO:37:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

His Thr Gln Val Leu Phe Ile Ala Lys
1 9

(2) INFORMATION FOR SEQ ID NO:38:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Thr Ile Ser Pro Ser Tyr Thr Tyr Tyr Arg
1 10

(2) INFORMATION FOR SEQ ID NO:39:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Arg Thr Leu Thr Leu Phe Asn Val Thr Arg
1 10

(2) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

Sub
E2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Ile Ser Pro Ser Tyr Thr Tyr Arg
1 5

(i) INFORMATION FOR SEQ ID NO:41:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Thr Ile Ser Pro Leu Asn Thr Ser Tyr Arg
1 5 10

(i) INFORMATION FOR SEQ ID NO:42:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Arg Thr Leu Thr Leu Leu Ser Val Thr Arg
1 5 10

(i) INFORMATION FOR SEQ ID NO:43:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 3 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...2
- (D) OTHER INFORMATION: Xaa = Ser or Thr

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 30...3
- (D) OTHER INFORMATION: Xaa = Asp or Glu

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Xaa Xaa Xaa Pro Xaa Xaa Leu Xaa Tyr
1 5

Sub
E2

(2) INFORMATION FOR SEQ ID NO:44:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 3...2
(C) OTHER INFORMATION: Xaa = Thr or Val

(A) NAME/KEY: Modified-site
(B) LOCATION: 34.3
(D) OTHER INFORMATION: Naa = Met or Phe

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gln Lys Lys
1 5 10

(2) INFORMATION FOR SEQ ID NO:45:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATHER:

(A) NAME/KEY: Modified-site
(B) LOCATION: 3...3
(D) OTHER INFORMATION: Xaa = Ile or Met

(A) NAME/KEY: Modified-site
(E) LOCATION: 4...4
(D) OTHER INFORMATION: Xaa = Asp, Glu, Gly, Lys or Pro

(A) NAME/KEY: Modified-site
(B) LOCATION: 8...8
(C) CHEF INFORMATION: Xaa = Lys, Met or Asn

(x1) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Xaa Tyr Xaa Xaa Xaa Val Xaa Xaa Xaa Xaa
1 5 10

(7) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
(E) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

Sub
E2

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 2...2

(D) OTHER INFORMATION: Xaa = Leu, Met, Ile, Val, Ser, Ala,
Thr, Phe, Cys, Gly, Asp or Glu

(A) NAME/KEY: Modified-site

(B) LOCATION: 9...9

(D) OTHER INFORMATION: Xaa = Lys, Arg, Tyr, His or Phe

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:47:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 2...2

(D) OTHER INFORMATION: Xaa = Leu, Met, Ile, Val, Ser, Ala,
Thr, Phe, Cys, Gly, Asp or Glu

(A) NAME/KEY: Modified-site

(B) LOCATION: 10...10

(D) OTHER INFORMATION: Xaa = Lys, Arg, Tyr, His or Phe

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO:48:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 1...1

(D) OTHER INFORMATION: Xaa = Thr, Ser or Met

(A) NAME/KEY: Modified-site

(B) LOCATION: 2...2

(D) OTHER INFORMATION: Xaa = Asp, Glu, Ala, Ser or Thr

Sub
E2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5

(C) INFORMATION FOR SEQ ID NO:49:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...1
- (D) OTHER INFORMATION: Xaa = Thr, Ser or Met

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Asp, Glu, Ala, Ser or Thr

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa
 1 5 10

(C) INFORMATION FOR SEQ ID NO:50:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...1
- (D) OTHER INFORMATION: Xaa = Thr, Ser or Met

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Asp, Glu, Ala, Ser or Thr

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5 10

(C) INFORMATION FOR SEQ ID NO:51:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

Sub
E2

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 2...2
(D) OTHER INFORMATION: Xaa = Thr, Ser or Met

(A) NAME/KEY: Modified-site
(B) LOCATION: 3...3
(D) OTHER INFORMATION: Xaa = Asp, Glu, Ala, Ser or Thr

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
1 5 10

(2) INFORMATION FOR SEQ ID NO:51:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 1...1
(D) OTHER INFORMATION: Xaa = Thr, Ser or Met

(A) NAME/KEY: Modified-site
(B) LOCATION: 2...2
(D) OTHER INFORMATION: Xaa = Asp, Glu, Ala, Ser or Thr

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO:52:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 1...1
(D) OTHER INFORMATION: Xaa = Thr, Ser or Met

(A) NAME/KEY: Modified-site
(B) LOCATION: 2...2
(D) OTHER INFORMATION: Xaa = Asp, Glu, Ala, Ser or Thr

Sub
E2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa
 1 5 10

(2) INFORMATION FOR SEQ ID NO:54:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(11) MOLECULE TYPE: peptide

(1X) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Thr, Ser or Met

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Asp, Glu, Ala, Ser or Thr

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa
 1 5 10

(2) INFORMATION FOR SEQ ID NO:55:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(11) MOLECULE TYPE: peptide

(1X) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Thr, Ser or Met

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Asp, Glu, Ala, Ser or Thr

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5 10

(2) INFORMATION FOR SEQ ID NO:56:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

Sub
E2

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 3...3
(D) OTHER INFORMATION: Xaa = Thr, Ser or Met

(A) NAME/KEY: Modified-site
(B) LOCATION: 4...4
(D) OTHER INFORMATION: Xaa = Asp, Glu, Ala, Ser or Thr

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
1 5 10

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 1...1
(D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:58:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 1...1
(D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Xaa Xaa Xaa Xaa Xaa Xaa Tyr
1 5

Sub
E2

(2) INFORMATION FOR SEQ ID NO:59:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 8 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:60:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 4 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...1
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:61:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...1
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa
1 5

Sub
E2

(2) INFORMATION FOR SEQ ID NO:62:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2..2
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa
 1 5

(2) INFORMATION FOR SEQ ID NO:63:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5

(2) INFORMATION FOR SEQ ID NO:64:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...1
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:

Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa
 1 5 10

Sub
E2

(C) INFORMATION FOR SEQ ID NO:65:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...1
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa
 1 5 10

(C) INFORMATION FOR SEQ ID NO:66:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa
 1 5 10

(C) INFORMATION FOR SEQ ID NO:67:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...2
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa
 1 5 10

*Sub
E2*

(2) INFORMATION FOR SEQ ID NO:68:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(x1) SEQUENCE DESCRIPTION: SEQ ID NO:68:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa
 1 5 10

(2) INFORMATION FOR SEQ ID NO:69:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (P) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(x1) SEQUENCE DESCRIPTION: SEQ ID NO:69:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5 10

(2) INFORMATION FOR SEQ ID NO:70:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (F) LOCATION: 4...4
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(x1) SEQUENCE DESCRIPTION: SEQ ID NO:70:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5 10

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E2

(2) INFORMATION FOR SEQ ID NO:71:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...1
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:71:

Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa Xaa
 1 5 10

(2) INFORMATION FOR SEQ ID NO:72:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...1
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa
 1 5 10

(2) INFORMATION FOR SEQ ID NO:73:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...2
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:73:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa Xaa
 1 5 10

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 E2

(2) INFORMATION FOR SEQ ID NO:74:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(x) SEQUENCE DESCRIPTION: SEQ ID NO:74:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa
 1 5 10

(2) INFORMATION FOR SEQ ID NO:75:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(x) SEQUENCE DESCRIPTION: SEQ ID NO:75:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa Xaa
 1 5 10

(2) INFORMATION FOR SEQ ID NO:76:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(x) SEQUENCE DESCRIPTION: SEQ ID NO:76:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa
 1 5 10

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E2

(2) INFORMATION FOR SEQ ID NO:77:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 4...4
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:77:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Xaa
 1 5 10

(2) INFORMATION FOR SEQ ID NO:78:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 4...4
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5 10

(2) INFORMATION FOR SEQ ID NO:79:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 4...5
- (D) OTHER INFORMATION: Xaa = Glu or Asp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5 10

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E2*

(C) INFORMATION FOR SEQ ID NO:80:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 2 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...2
- (D) OTHER INFORMATION: Xaa = Thr, Val, Met, Leu, Ile, Ser, Ala, Gly, Asn, Cys, Asp or Phe

- (A) NAME/KEY: Modified-site

- (B) LOCATION: 9...9

- (D) OTHER INFORMATION: Xaa = Lys, Arg, Tyr or His

(x1) SEQUENCE DESCRIPTION: SEQ ID NO:80:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5

(C) INFORMATION FOR SEQ ID NO:81:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...2
- (D) OTHER INFORMATION: Xaa = Thr, Val, Met, Leu, Ile, Ser, Ala, Gly, Asn, Cys, Asp or Phe

- (A) NAME/KEY: Modified-site

- (B) LOCATION: 10...10

- (D) OTHER INFORMATION: Xaa = Lys, Arg, Tyr or His

(x1) SEQUENCE DESCRIPTION: SEQ ID NO:81:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10

(C) INFORMATION FOR SEQ ID NO:82:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

Sub
E2

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 1...2
(D) OTHER INFORMATION: Xaa = Tyr, Phe or Trp

(A) NAME/KEY: Modified-site
(B) LOCATION: 3...9
(D) OTHER INFORMATION: Xaa = Phe, Ile, Trp, Met or Leu

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:82:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:83:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 1...2
(D) OTHER INFORMATION: Xaa = Tyr, Phe or Trp

(A) NAME/KEY: Modified-site
(B) LOCATION: 10...10
(D) OTHER INFORMATION: Xaa = Phe, Ile, Trp, Met or Leu

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:83:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO:84:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 1...2
(D) OTHER INFORMATION: Xaa = Thr, Met or Ser

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:84:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
1 1

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E2

(2) INFORMATION FOR SEQ ID NO:85:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Thr, Met or Ser

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:85:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5

(2) INFORMATION FOR SEQ ID NO:86:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Thr, Met or Ser

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:86:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5 10

(2) INFORMATION FOR SEQ ID NO:87:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Thr, Met or Ser

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:87:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5 10

Sub
E2

(2) INFORMATION FOR SEQ ID NO:88:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 8 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Asp, Glu, Ala or Ser

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:88:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:89:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Asp, Glu, Ala or Ser

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:89:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
1 5

(2) INFORMATION FOR SEQ ID NO:90:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Asp, Glu, Ala or Ser

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:90:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
1 5 10

Sub
E2

(2) INFORMATION FOR SEQ ID NO:91:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...3
- (D) OTHER INFORMATION: Xaa = Asp, Glu, Ala or Ser

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:91:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr
 1 5 10

(2) INFORMATION FOR SEQ ID NO:92:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 8 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...2
- (D) OTHER INFORMATION: Xaa = Leu, Met, Val, Ile, Ser, Ala, Thr, Phe, Cys, Gly or Asp

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...8
- (D) OTHER INFORMATION: Xaa = Lys, Tyr, Arg, His or Phe

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:92:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5

(2) INFORMATION FOR SEQ ID NO:93:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 3...2
- (D) OTHER INFORMATION: Xaa = Leu, Met, Val, Ile, Ser, Ala, Thr, Phe, Cys, Gly or Asp

Sub
 E2

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 9...9
- (D) OTHER INFORMATION: Xaa = Lys, Tyr, Arg, His or Phe

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:93:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:94:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...2
- (D) OTHER INFORMATION: Xaa = Leu, Met, Val, Ile, Ser, Ala,
Thr, Phe, Cys, Gly or Asp

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 10...10
- (D) OTHER INFORMATION: Xaa = Lys, Tyr, Arg, His or Phe

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:94:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO:95:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...2
- (D) OTHER INFORMATION: Xaa = Leu, Met, Val, Ile, Ser, Ala,
Thr, Phe, Cys, Gly or Asp

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 11...11
- (D) OTHER INFORMATION: Xaa = Lys, Tyr, Arg, His or Phe

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:95:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO:96:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 8 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Leu, Met, Ile, Val, Ala, Ser, Thr, Gly, Asn, Cys, Phe or Asp

- (A) NAME/KEY: Modified-site

- (B) LOCATION: 8...8

- (D) OTHER INFORMATION: Xaa = Lys, Arg or His

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:96:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:97:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site

- (B) LOCATION: 2...2

- (D) OTHER INFORMATION: Xaa = Leu, Met, Ile, Val, Ala, Ser, Thr, Gly, Asn, Cys, Phe or Asp

- (A) NAME/KEY: Modified-site

- (B) LOCATION: 9...9

- (D) OTHER INFORMATION: Xaa = Lys, Arg or His

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:97:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 9

(2) INFORMATION FOR SEQ ID NO:98:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 2...2
(D) OTHER INFORMATION: Xaa = Leu, Met, Ile, Val, Ala, Ser,
Thr, Gly, Asn, Cys, Phe or Asp

(A) NAME/KEY: Modified-site
(B) LOCATION: 10...10
(D) OTHER INFORMATION: Xaa = Lys, Arg or His

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:98:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(x) INFORMATION FOR SEQ ID NO:98:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 2...2
(D) OTHER INFORMATION: Xaa = Leu, Met, Ile, Val, Ala, Ser,
Thr, Gly, Asn, Cys, Phe or Asp

(A) NAME/KEY: Modified-site
(B) LOCATION: 11...11
(D) OTHER INFORMATION: Xaa = Lys, Arg or His

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:99:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(x) INFORMATION FOR SEQ ID NO:100:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide
(ix) FEATURE:

(A) NAME/KEY: Modified-site
(B) LOCATION: 1...2
(D) OTHER INFORMATION: Xaa = Tyr, Phe or Trp

(A) NAME/KEY: Modified-site
(B) LOCATION: 8...8
(D) OTHER INFORMATION: Xaa = Phe, Ile, Leu or Trp

Sub
E2

11/

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:100:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:101:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(11) MOLECULE TYPE: peptide

(12) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 2...2
- (D) OTHER INFORMATION: Xaa = Tyr, Phe or Trp
- (A) NAME/KEY: Modified-site
- (B) LOCATION: 9...9
- (D) OTHER INFORMATION: Xaa = Phe, Ile, Leu or Trp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:101:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5

(2) INFORMATION FOR SEQ ID NO:102:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(11) MOLECULE TYPE: peptide

(12) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1...2
- (D) OTHER INFORMATION: Xaa = Tyr, Phe or Trp
- (A) NAME/KEY: Modified-site
- (B) LOCATION: 10...10
- (D) OTHER INFORMATION: Xaa = Phe, Ile, Leu or Trp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:102:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

(2) INFORMATION FOR SEQ ID NO:103:

(1) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

Sub
E2

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 2...2

(D) OTHER INFORMATION: Xaa = Tyr, Phe or Trp

(A) NAME/KEY: Modified-site

(B) LOCATION: 11...11

(D) OTHER INFORMATION: Xaa = Phe, Ile, Leu or Trp

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:103:

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10